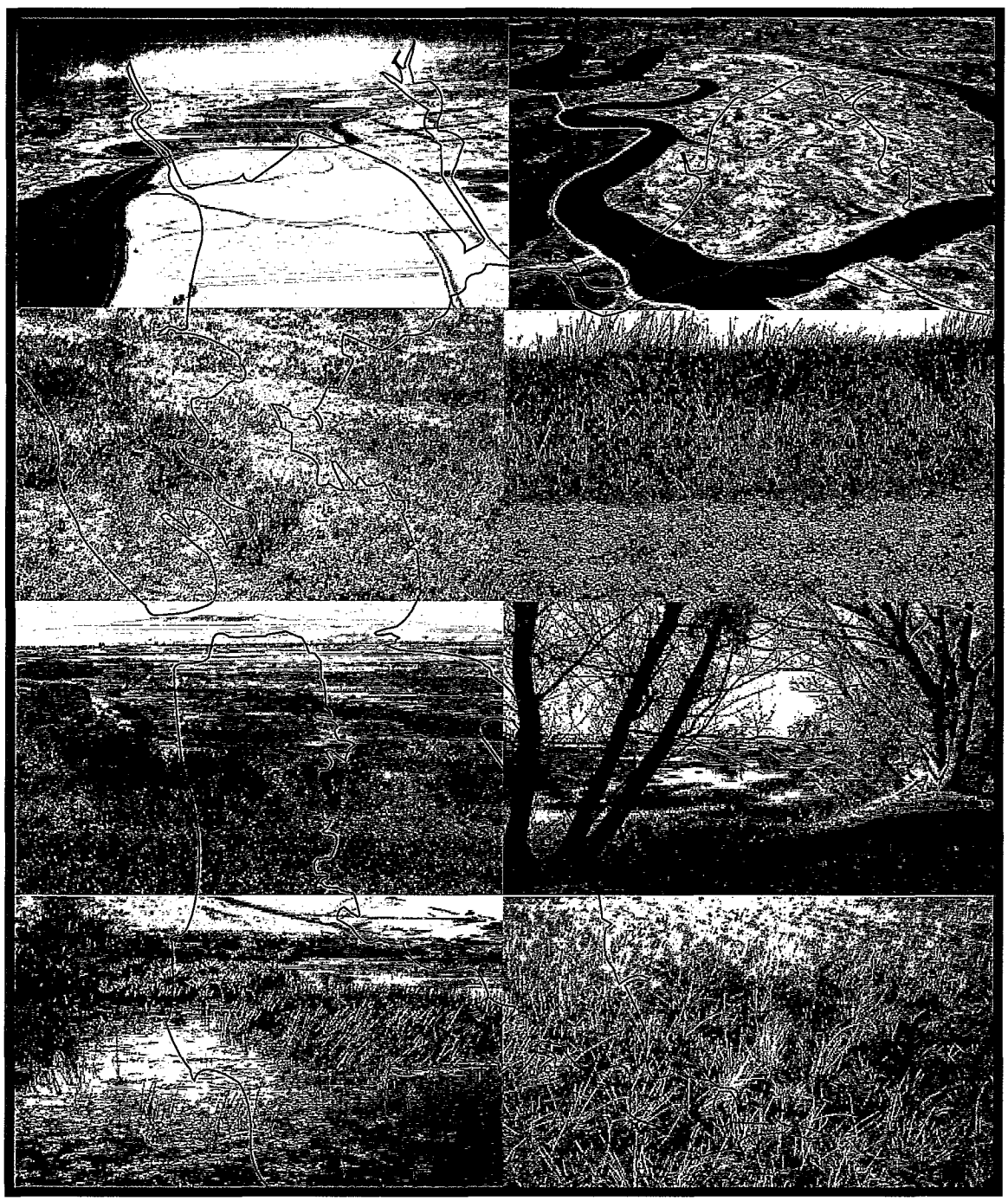
San Francisco Bay Area Wetlands Ecosystem Goals Project

Information Package



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Wetlands Ecosystem Goals Project for the San Francisco Bay Region

Information Package

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INTRODUCTION

For several years, many agency and public interests involved in wetlands management and regulation in the San Francisco Bay Area have voiced the need to develop regional wetlands goals. These goals would represent a shared vision of what is needed to ensure the good health of the region's wetlands ecosystems. The process of developing these goals is now underway in the Regional Wetlands Ecosystem Goals Project, and you are invited to participate.

The Regional Wetlands Ecosystem Goals Project will use available scientific knowledge to identify the types, amounts, and distribution of wetlands and related habitats needed to sustain diverse and healthy communities of fish and wildlife resources in the San Francisco Bay Area. The project will provide a biological basis to guide a regional wetlands planning process for public and private interests seeking to preserve, enhance, and restore the ecological integrity of wetland communities.

PROJECT RATIONALE

The concept to develop regional wetlands goals is recommended by the Governor's Wetlands Policy and by the Comprehensive Conservation and Management Plan of the U.S. Environmental Protection Agency's San Francisco Estuary Project. It is also supported by most agencies and non-governmental groups with major planning, operational, or regulatory interests in Bay Area wetlands. Major interests or programs involved in protecting and improving the area's wetlands resources include:

Citizens Committee to Complete the Refuge
National Oceanic and Atmospheric Administration's National Estuarine Research Reserve
S.F. Bay Conservation and Development Commission's North Bay Wetlands Protection Program
San Francisco Bay Joint Venture
Save San Francisco Bay Association's Partnership for the San Pablo Baylands
Suisun Marsh Protection Plan
U.S. Environmental Protection Agency's North Bay Initiative and Forum
U.S. Fish and Wildlife Service's endangered species recovery plans
National Marine Fisheries Service's endangered species recovery plans

The Regional Wetlands Ecosystem Goals Project (hereinafter referred to as the Wetlands Goals Project) can provide a common biological basis for these efforts.

Efforts to protect and enhance wetlands in the Bay Area are commonly driven by the following beliefs. First, the ecological health of the region requires more wetlands of higher quality than exist now. Second, as urban development continues, the amount of land available for wetlands restoration is decreasing. And third, no amount of wetland of any one kind can provide all the desired and necessary functions of wetlands. Therefore, the basic questions the Wetlands Goals Project will try to answer are: What types and quantities of wetlands are required, and where are they required, to provide adequate habitat for a diverse and healthy community of fish and wildlife?

THE WETLANDS ECOSYSTEM GOALS *WILL* :

- Be based on biological information and consensus of best professional judgment This means that the goals will be based upon an orderly and documented method of investigation that identifies key questions, assembles a body of knowledge based upon observation and experimentation that addresses these questions, draws conclusions based upon the knowledge, and assesses the uncertainty of the conclusions. Dissenting views of participants, including the public, will be presented.

- Be expressed as one or more narratives and graphics of alternative habitat scenarios with quantitative and qualitative objectives. This will include producing alternative regional wetlands mosaics in a geographic information system (GIS) that will be available to agency decision-makers, private interests, and the public.

- Be flexible to allow for changing scientific understanding, landscape modifications, and public support.

THE WETLANDS ECOSYSTEM GOALS *WILL NOT* :

- Be a legal delineation of wetlands.

- Be a substitute for detailed investigations of wetlands project sites.

- Dictate wetlands policy or land use regulation for any property.

- Require any landowner, public or private, to modify current land uses or practices.

PROJECT HISTORY

The need to establish regional wetlands goals emerged initially from discussions among participants of the San Francisco Estuary Project in the early 1990s. Participants in the Estuary Project included representatives of the environmental community, the private sector, and government. The Estuary Project's final product, the Comprehensive Conservation and Management Plan of June 1993, recommended the preparation of a regional wetlands management plan based on regional wetlands goals. Later that year, the San Francisco Estuary Institute (SFEI) developed a proposal to help establish regional wetlands goals, and the concept of that proposal was approved by the State Resources Agency, the San Francisco Bay Regional Water Quality Control Board, and the U.S. Environmental Protection Agency.

Additional impetus to develop regional wetlands goals came from a series of discussions held in 1994 by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. These discussions were held to improve interagency coordination and to forge a shared vision of the regional habitat requirements of fish and wildlife. In late 1994, representatives of these agencies began discussions with staff of SFEI that ultimately led to the development of the process embodied by the Wetlands Goals Project, i.e., to produce scientifically valid, regional wetlands goals.

Funding for the Wetlands Goals Project began in early 1994. Since then, SFEI has developed background scientific materials about the historical and existing conditions of wetlands in the area. These materials were produced as byproducts of work conducted for the Bay Conservation and Development Commission, Bay-Delta Oversight Council, National Oceanographic and Atmospheric Administration, Shell Oil Spill Litigation Settlement Trustees, State Resources Agency, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service.

GEOGRAPHIC SCOPE

The geographic scope of the Wetlands Goals Project includes the four primary sub regions of the San Francisco Bay downstream of the western boundary of the Sacramento-San Joaquin Delta at Broad Slough: Suisun Marsh and Bay, San Pablo Bay, Central Bay, and South Bay (**Figure 1**). At this time, the Project pertains primarily to the region's baylands, which include mudflats, existing tidal marsh, tidal marsh channels, and seasonal and other wetlands within

diked historical tidal marshlands. Adjacent uplands and subtidal areas will be considered to the extent necessary to develop ecological goals for the baylands.

The Wetlands Goals Project will initially focus on the baylands because they encompass the best understood wetlands, support the most species of special concern, and may represent the best opportunities to restore or enhance regional wetlands resources in the near future. Funding restrictions, a need for solutions to dredging issues, and interagency emphasis on the recovery of salt marsh ecosystem endangered species also explain the initial focus of the goals process on the baylands of the Bay Area. Eventually, the Wetlands Goals Project may expand to include in-stream, riparian, and terrestrial habitats of the Bay Area to facilitate watershed planning and comprehensive estuarine conservation efforts. Ultimately, it may develop wetlands goals for the Sacramento-San Joaquin Delta.

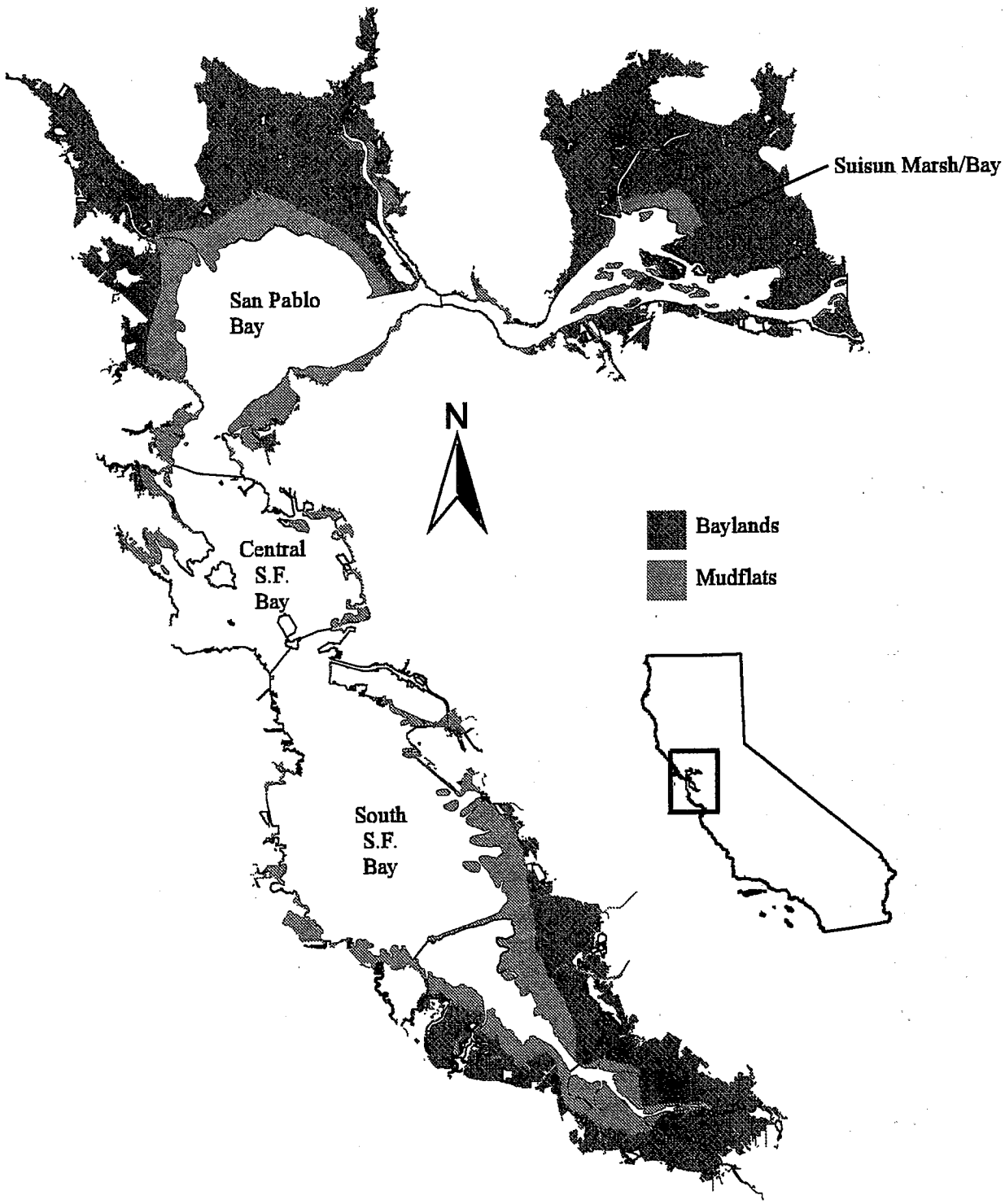
WHO WILL USE THE WETLANDS ECOSYSTEM GOALS?

The wetlands ecosystem goals, and the data and other information on which they are based, will be made available to the community at large. Anyone who wants to implement the goals will be invited to do so, but no entity will be required to implement them. In this respect, the goals will be a collective vision, but not a requirement.

The goals should be useful to many entities involved in protecting and improving wetlands. These may include city and county planning departments that wish to better protect wetlands through zoning; open space, park, and resource conservation districts interested in undertaking wetlands restoration or enhancement projects; private landowners seeking to improve wetlands on their properties; and State and Federal resource agencies involved in wetlands regulation or mandated to protect fish and wildlife and their supporting wetland habitats. Prominent regional agencies and programs expected to have interest in implementing the wetlands ecosystem goals include the CALFED Bay-Delta Program, Category 3 Projects in the State Water Resources Control Board's 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, California Department of Fish and Game, San Francisco Bay Conservation and Development Commission, San Francisco Bay Joint Venture, San Francisco Bay Regional Water Quality Control Board, U.S. Army Corps of Engineers' Long Term Management Strategy for Dredged Material, and U.S. Fish and Wildlife Service.

Figure 1.

S.F. Bay Area Wetlands Ecosystem Goals Project
Geographic Scope



Once the goals are established, regulatory and planning agencies may use them in the same fashion as they would any other similar planning document. Should an agency wish to incorporate the goals into its regulatory or planning process, it would do so in accordance with its governing regulations and procedures. For example, if the San Francisco Bay Regional Water Quality Control Board decides to incorporate the goals into its Basin Plan, it would do this through its usual process of Basin Plan revision. Similarly, if a city or county planning department wishes to incorporate the goals into a land use plan, it would do this through its established process.

As noted previously, the San Francisco Estuary Project's Comprehensive Conservation and Management Plan recommended the preparation of a Regional Wetlands Plan based on regional wetlands goals. Under the lead of the State Resources Agency, the San Francisco Bay Regional Water Quality Control Board will coordinate the development of this Plan in concert with other agencies and the public. The Regional Board is currently developing a strategy for plan development; this strategy will describe the process for incorporating into the Plan the wetlands ecosystems goals.

RELATIONSHIP BETWEEN WETLANDS ECOSYSTEM GOALS AND ENDANGERED SPECIES RECOVERY PLANS

Under the authority of the Federal Endangered Species Act, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service prepare plans to guide the recovery of populations of federally listed threatened and endangered species. In 1984, the U.S. Fish and Wildlife Service prepared a combined recovery plan for two species that occur in the project area -- the salt marsh harvest mouse and the California clapper rail; this plan currently is undergoing revision. The U.S. Fish and Wildlife Service also has published a draft recovery plan for several native fishes of the Sacramento-San Joaquin Delta. The National Marine Fisheries Service is preparing a recovery plan for winter-run chinook salmon in the Sacramento River.

Ideally, the Wetlands Goals Project would establish the regional wetlands goals using the federal recovery plans as a base. However, it will be many months until these recovery plans are completed. In order to minimize differences between the final wetlands ecosystem goals and the recovery plans, participants of the Wetlands Goals Project, several of whom are on recovery teams, will

coordinate with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service during recovery plan preparation.

In the event that the final wetlands ecosystem goals and recovery plan recommendations differ, the recovery plans would take precedence over the goals. Future reconciliation of the wetlands ecosystem goals with the recovery plan recommendations would occur by adjusting the goals as part of the ongoing adaptive management process referred to in Step 8 of the goals development process, described below.

PARTICIPANTS

Establishing regional goals for the Bay Area's wetlands is a complex process due to the overlapping jurisdictions and diverse views among the agencies and individuals involved. The plan for dealing with this is twofold: separate science and policy to the extent possible, and build in a rigorous system of peer review and public input for the products of the Wetlands Goals Project. The following groups will share responsibility for developing the Goals:

Resource Managers Group (RMG): Senior agency ecologists and biologists who will establish and oversee the Project and act as the main decision-making body. Members of this group are listed at the beginning of this document.

Administrative Core Team: Agency representatives who will provide administrative and public outreach support for the Project. This group includes staff of the California Department of Fish and Game, California State Resources Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Joint Venture, San Francisco Bay Regional Water Quality Control Board, San Francisco Estuary Institute, San Francisco Estuary Project, and U.S. Environmental Protection Agency.

Focus Teams: Scientists with recognized expertise in targeted populations of fish, wildlife, and plants who will prepare wetlands recommendations. Each Focus Team will be assisted by one or more RMG member, and will act as a technical advisor to the RMG. The Focus Teams may include scientists from government agencies, academic institutions, non-governmental organizations, and the private sector. Focus Team membership will be decided by the RMG, based upon expertise, regional experience, and commitment to the Project.

The five Focus Teams that are being established include:

1. Estuarine Fishes and Invertebrates
2. Baylands Plants
3. Baylands Mammals, Reptiles, Amphibians, and Terrestrial Invertebrates
4. Shorebirds and Waterfowl
5. Other Baylands Birds (e.g., egrets, rails, raptors, songbirds, terns, etc.).

In addition, a Hydro-geomorphic Advisory Team is being established. This team will work with the Focus Teams and the RMG to assure that, during the process of developing goals, hydrologic and geomorphic constraints are adequately considered.

San Francisco Estuary Institute (SFEI): A nonprofit organization that will assist the RMG in establishing the Project's analytical process and provide support, research, and coordination for the RMG and the Focus Teams. This will include digitizing and analyzing species and habitat data, and producing habitat maps and other graphics using a geographic information system. This is consistent with the role for SFEI as recommended in the San Francisco Estuary Project's Comprehensive Conservation and Management Plan.

Science Review Group: Leading scientists with expertise in wetland ecosystem analysis, integrated resource planning, and conservation biology. This group will provide critical review of the Project's process and products, and help the RMG resolve technical issues as they arise. In short, this group will keep the Project's science on track. Membership will include representatives of SFEI's Committee of Science Advisors (listed at the beginning of this document) and other experts from the Bay Area and beyond.

Bay Area Wetlands Planning Group: Representatives of State and Federal agencies and others who coordinate wetlands planning issues in the Bay Area. This group will help to assure funding for the Project, and also attempt to address policy questions that arise. Members include staff of CALFED, California Environmental Protection Agency, California Coastal Conservancy, California Department of Fish and Game, California Resources Agency, California State Water Resources Control Board, San Francisco Bay Conservation and Development Commission, San Francisco Bay Joint Venture, San Francisco Bay Regional Water Quality Control Board, San Francisco Estuary Institute, San Francisco Estuary Project, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and U.S. Environmental Protection Agency.

The Public: Interested landowners; representatives of industry, agriculture, the environmental community; and others. The public will provide critical review of the Focus Team habitat recommendations and the draft habitat mosaics developed by the RMG. The public will have access to the GIS data and to all interim project products. The public will be able to meet with the Focus Teams and the RMG on several occasions as the project proceeds, and will be encouraged to provide comments on products. Of course, all project meetings are open to the public.

THE PROCESS

The RMG has adopted an eight-step process for establishing the regional wetlands ecosystem goals. This process was initially developed by SFEI and has been reviewed and supported by the SFEI Committee of Science Advisors. The RMG understands that the process outlined below may not work equally well for all Focus Teams, and that the process may be modified somewhat as it continues.

Step 1: The RMG, in concert with the Focus Teams, will select the species of baylands plants and animals that will be the subject of this effort. Although the RMG has established five initial Focus Teams, based on a broad grouping of species, the Focus Team members themselves will select the individual species or species assemblages for which they will then determine habitat needs. The Focus Teams likely will "focus" on a subset of all the species that occur in the Bay Area. Threatened and endangered species will warrant close attention.

Step 2: The RMG will identify the habitat types that support the communities of plant and animal species selected in Step 1. The initial types to be evaluated are those described in the San Francisco Estuary Project's Status and Trends Report on Wetlands and Related Habitats: (1) Subtidal and Tidal Waters; (2) Intertidal Mudflat; (3) Tidal Salt Marsh; (4) Tidal Brackish Marsh; (5) Tidal Freshwater Marsh; (6) Diked Seasonal and Perennial Wetlands; (7) Salt Pond; (8) Lakes and Ponds; (9) Adjacent Riparian Woodland; and (10) Adjacent Upland. The RMG may decide to modify this list somewhat after the Focus Teams select the species or species assemblages for evaluation.

Step 3: The Focus Teams will undertake a thorough review and documentation of existing data and other information regarding the historical and modern distribution and abundance of the selected wetland habitats and

species or species assemblages. Each Focus Team also will prepare a matrix that displays the relative benefits of each habitat type for each species or species assemblage. This will enable a better understanding of the relationship between habitats and populations of fish and wildlife species.

Each Focus Team will then establish qualitative and/or quantitative objectives for the selected species or species assemblages. The qualitative objectives will describe the optimal physical and chemical characteristics of the various habitats necessary to support healthy populations. These characteristics might include water quality, frequency and duration of soil saturation or inundation, soil pH, etc. The quantitative objectives could be a measured average value for a population parameter, an average value plus or minus some measured or estimated amount of variability, an historic level, or a level that is unprecedented for the region but consistent with natural trends in the changing distribution or magnitude of the population. The specificity of the quantitative objectives probably will vary considerably among species.

The kinds of information that might be used as starting points to establish objectives may include Waterfowl Management Plans; goals for Habitat Joint Ventures of neighboring regions; goals in the Central Valley Project Improvement Act; the 1988 State Salmon, Steelhead Trout and Anadromous Fisheries Restoration Program Act; or other ecological goals for the region.

Focus Teams may request that SFEI obtain selected data sets on species distribution and abundance, and they may want some of these data sets included as data layers in the SFEI GIS. The RMG must approve the inclusion of any data into the GIS, and its decision will be based on the perceived value of the data and the cost of data entry.

Step 4: Based on the review of existing data and other information about the historical and modern distribution and abundance of targeted wetland habitats and species or species assemblages, each Focus Team will formulate initial narrative recommendations for the amount and arrangement of habitats. To the extent possible, these recommendations will indicate the minimum habitat patch size, optimal patch shape, and maximum distance between patches. Focus Teams should develop these

habitat goals for the region as a whole, and for each of the four sub regions. The narrative recommendations likely will be illustrated with maps suitable for incorporation into the GIS; however, not every Focus Team may produce a map. The scale of the maps is yet to be decided.

Each Focus Team will provide its narrative recommendations and map(s) (if available) to the RMG, plus a short report of the supporting scientific rationale. This rationale will describe: (1) what is certain, based upon established scientific fact, (2) what is expected, based upon extrapolation from fact, and (3) what is anticipated in the absence of fact, but based upon best professional judgment.

The Focus Team recommendations should be stated in terms of habitat for three main reasons. First, some targeted populations will vary in size due to natural processes and human actions outside of the Bay Area. For these populations, ecosystem goals stated in terms of size might not be achievable because of circumstances beyond the local ecosystem. Second, the distribution, abundance, and hydroperiod of Bay Area wetlands are particularly variable in time, due to natural climatic variability. Population response to this variability involves lag times and other dynamics which can be difficult to monitor and discern. Third, habitats are easier to monitor than living resources.

Step 5: Once the Focus Teams have prepared their initial habitat recommendations, they will work with each other and the RMG to maximize agreement between each of the Focus Team narrative recommendations and the illustrative maps. This likely will be a complex and time-consuming step that will involve much iterative analysis. The rate of progress through this step is likely to vary among the Focus Teams.

Once a Focus Team develops its draft habitat recommendations, it will share this information with the public at a workshop. During this public comment period, the draft recommendations also will be available for review at appropriate sites in the Bay Area. Following public review, each Focus Team will consider the public's comments as it prepares its final recommendations. Each Focus Team will prepare a report describing how it addressed the public's comments.

To assist the RMG in this process, SFEI will digitize the Focus Team habitat maps and, using the GIS, facilitate a comparison of the narrative recommendations and accompanying maps.

Step 6: The RMG will combine the final Focus Team recommendations into a draft narrative of wetlands ecosystem goals with alternative habitat mosaics. In this step, the RMG will need to identify conflicting recommendations of the various Focus Teams. For example, the Fishes Focus Team may recommend a particular area be restored to tidal salt marsh, while the Shorebird/Waterfowl Focus Team may recommend that it be maintained as a seasonal wetland. In helping to resolve these differences, the RMG will need to identify and weigh the attendant ecological conflicts. The resolution of these conflicts can be planned through geographic separation of the habitats, project design, or project timing.

Combining the Focus Team recommendations into a set of goals and mosaics will occur in several interative adjustments: SFEI will construct a matrix showing the amount of spatial separation and overlap between the Focus Team habitat recommendations. The Focus Teams and the RMG will review this to determine the areas where there remain conflicts between recommendations. Conflicting recommendations will require further discussion and resolution by the Focus Teams and the RMG. Revisions will continue until one or more alternative habitat mosaics is developed. The optimal mosaics will minimize the disagreement between the habitat recommendations.

The draft habitat mosaics will be presented to the public in a workshop and will be available for review at appropriate sites in the Bay Area. Public participants will be encouraged to submit comments on the draft to the RMG. The RMG will consider these comments as it prepares the final habitat mosaics. The Project's final report will include the public comments submitted on the draft mosaics, and a description of how the RMG addressed them.

All interim stages of production of each recommendation and alternative habitat mosaic will be archived in hard-copy and GIS at SFEI.

The RMG's final wetlands ecosystem goals will be presented as a narrative, with or without illustrative maps, for the entire Project region and for each of its four sub regions.

Step 7: The RMG and Focus Teams, with support from SFEI, will develop guidelines for implementing projects to attain the goals. These guidelines will address issues such as the appropriate sequencing and scope of wetlands projects to minimize temporal ecological impacts that might occur as the wetlands ecosystem goals are achieved.

The RMG also will draft a set of general principles to guide wetlands improvement efforts. For example, the RMG might provide guidelines or criteria for use of dredged materials for wetlands restoration or enhancement; specify where diked baylands should be managed intensively for a greater level of waterfowl support than the lands would naturally sustain to compensate for declines in habitat throughout the flyway; or identify cooperative adjustments in farming practices that would help achieve the goals, etc.

Step 8: The RMG will develop an adaptive management model for wetlands ecosystem decisions. This model will recommend a method for: (1) assessing progress towards achieving the regional wetlands goals, (2) identifying and resolving impediments to goal attainment, (3) assessing the biological risks of not attaining the goals, and (4) revisiting and adjusting the regional goals to accommodate new information, understanding, and changes in habitat conditions.

During this analytical process, questions may arise about the nature of the baylands that cannot be addressed during the time frame of the Wetlands Goals Project.. For example, questions have been raised about sediment supply, sediment quality, and sea level rise. The RMG and Focus Teams should help translate these questions into statements of needed research that could serve as the scientific basis to adjust the goals in the future.

The products developed in Steps 7 and 8 will undergo public review and comment before being prepared in final form.

SUMMARY OF PRODUCTS

Project participants will be expected to develop a variety of products and to share them with others. The following sections describe the products each group will provide.

The RMG Will Provide Each Focus Team:

- Project Information Package
- Maps of Historical and Current Wetlands (**See Figure 2**)
- Descriptions of Historical and Current Wetlands
  - Distribution
  - Total Area
  - Metrics (patch size, shape, inter-patch distance, etc.)
- Data/GIS Overlays Available From SFEI
  - Climate Data
  - Avian Resources
  - Infrastructure
  - Land Use Zonation
- Recent Summary Reports
  - Geological Survey Open File Report 94-543
  - San Francisco Estuary Project Status and Trends Reports
  - U.S. Fish and Wildlife Service Endangered Species Recovery Plans
  - U.S. Fish and Wildlife Service Concept Plans for Waterfowl Habitat Protection
  - Descriptions of Current Federal and State Estuarine Research and Monitoring

Each Focus Team Will Provide the RMG:

- Fish and Wildlife Species Use of Wetlands by Habitat Type
  - List of all species considered
  - List of Key Species/species assemblages, including rationale for list
  - Matrix of Species and Habitats, showing relative habitat benefits for each species/species assemblage
- Status of Key Species/Species Assemblages
  - Review and Summary of Existing Data Sets on Historical and Current Species Distribution and Abundance
  - List of Data Sets to be added to SFEI GIS
- Habitat Recommendation for Key Species/Species Assemblages (map and/or narrative)
  - Minimum Required Area of Each Habitat Type
  - Optimal Habitat Metrics (patch size, shape, inter-patch distance, etc.)

The RMG Will Provide the Public Draft and Final:

- Focus Team Habitat Recommendations
  - Narrative Descriptions
  - Graphic Representations
- Regional Habitat Goal Alternatives
  - Description of Resolved Ecological Conflicts
  - Narrative Descriptions
  - Graphic Representations
- Guidelines for Implementing Wetlands Projects
  - Sequencing
  - Scope
  - Other Information
- Adaptive Management Model for Wetlands Ecosystem Decisions
  - Assess Progress and Impediments in Attaining Goals
  - Assess Risks of Not Attaining Goals
  - Revise Regional Goals
  - Identify Research Needs

PROJECT SCHEDULE

This schedule identifies the project's major milestones. The details of check points for the Focus Teams, public meetings of the RMG, and periods of contact with the Science Review Group are not shown. Given that the project is largely without precedence in this region, its timing and duration cannot be forecast precisely.

Jun - Oct 1995 (Steps 1 and 2)	Organize Project Structure Establish Focus Teams Select Species and Habitats
Nov 1995 - Apr 1996 (Steps 3 -5)	Develop Focus Team Recommendations Public and Science Review of Steps 3-5 Products
May - Jun 1996 (Steps 6 - 8)	Develop Draft Wetlands Goals Develop Adaptive Management Model Develop Guidelines for Implementation
Jul 1996	Public and Scientific Review of Steps 6-8 Products
Aug - Sept 1996	Address Public and Scientific Comments
September 1996	Release Final Products

Figure 2

Examples of (a) the Historical Wetlands Atlas (circa 1795), and (b) the modern Baylands Atlas (circa 1995), showing details of the Mountain View Quadrangle.